CLAIMS

1. An isolated nucleic acid comprising a nucleotide sequence selected from the group consisting of:

a) the *dbv* gene cluster encoding the polypeptides required for the synthesis of A40926 (SEQ ID NO: 1);

b) a nucleotide sequence encoding the same polypeptides encoded by the *dbv* gene cluster (SEQ ID NO: 1), other than the nucleotide sequence of the *dbv* gene cluster;

c) any nucleotide sequence of *dbv* ORFs 1 to 37, encoding the polypeptides of SEQ ID NOS: 2 to 38;

d) a nucleotide sequence encoding the same polypeptides encoded by any of *dbv* ORFs 1 to 37 (SEQ ID NOS: 2 to 38), other than the nucleotide sequence of said ORF.

2. An isolated nucleic acid of claim 1 comprising a nucleotide sequence selected from the group consisting of:

e) a nucleotide sequence of any of *dbv* ORFs 3 to 4, 6 to 10, 18 to 20, 22 to 23, 29 to 30, and 36 (SEQ ID NOS: 4 to 5, 7 to 11, 19 to 21, 23 to 24, 30 to 31, and 37);

f) a nucleotide sequence encoding the same polypeptide encoded by any of *dbv* ORFs 3 to 4, 6 to 10, 18 to 20, 22 to 23, 29 to 30, and 36 (SEQ ID NOS: 4 to 5, 7 to 11, 19 to 21, 23 to 24, 30 to 31, and 37), other than the nucleotide sequence of said ORF.

g) a nucleotide sequence encoding a polypeptide that is at least 80%, preferably 86%, more preferably 90%, most preferably 95% or more, identical in amino acid sequence to a polypeptide encoded by any of *dbv* ORFs 3, 6 to 9, 18 to 20, 22 to 23, 29 to 30, and 36 (SEQ ID NOS: 4, 7 to 10, 19 to 21, 23 to 24, 30 to 31, and 37);

h) a nucleotide sequence encoding a polypeptide that is at least 87%, preferably 90%, more preferably 95% or more, identical in amino acid sequence to a polypeptide encoded by any of *dbv* ORFs 4 and 10 (SEQ ID NOS: 5 and 11).

3. An isolated nucleic acid according to claim 2 comprising a combination of nucleotide sequences which encode polypeptides required for the synthesis of the 4-hydroxy-phenylglycine residues of A40926 consisting of *dbv* ORFs_1, 2, 5 and 37 (SEQ ID NOS: 2, 3, 6 and 38), or nucleotide sequences encoding the

same polypeptides, other than the nucleotide sequences of said ORFs.

4. An isolated nucleic acid according to claim 2 comprising a combination of nucleotide sequences which encode polypeptides required for the synthesis of the 3,5-dihydroxy-phenylglycine residues of A40926 consisting of *dbv* ORFs 30 to 34, and 37 (SEQ ID NOS: 31 to 35, and 38), or nucleotide sequences encoding the same polypeptides, other than the nucleotide sequences of said ORFs.

5. An isolated nucleic acid according to claim 2 comprising a combination of nucleotide sequences which encode polypeptides required for the synthesis of the heptapeptide skeleton of A40926 consisting of *dbv* ORFs 16, 17, 25, 26 and 36 (SEQ ID NOS: 17 to 18, 26 to 27, and 37), or nucleotide sequences encoding the same polypeptides, other than the nucleotide sequences of said ORFs.

6. An isolated nucleic acid according to claim 2 comprising a nucleotide sequence which encodes a polypeptide required for the chlorination of the aromatic residues of amino acids 3 and 6 of A40926 consisting of *dbv* ORF 10 (SEQ ID NO: 11), or nucleotide sequences encoding the same polypeptide, other than the nucleotide sequence of said ORF.

7. An isolated nucleic acid according to claim 2 comprising a nucleotide sequence which encodes a polypeptide required for the ß-hydroxylation of the tyrosine residue of amino acid 6 of A40926 consisting of *dbv* ORF_28 (SEQ ID NO: 29), or nucleotide sequences encoding the same polypeptide, other than the nucleotide sequence of said ORF.

8. An isolated nucleic acid according to claim 2 comprising a combination of nucleotide sequences which encode polypeptides required for the cross-linking of the aromatic residues of amino acids at positions 2 and 4, 4 and 6, 1 and 3, and 5 and 7 of A40926 consisting of *dbv* ORFs_11 to 14 (SEQ ID NOS: 12 to 15), or nucleotide sequences encoding the same polypeptides, other than the nucleotide sequences of said ORFs.

9. An isolated nucleic acid according to claim 2 comprising a combination of nucleotide sequences which encode polypeptides required for the addition and formation of the N-acyl glucuronamine residue of A40926 consisting of ORFs 9, 23 and 29 (SEQ ID NOS: 10, 24 and 30), or nucleotide sequences encoding the same polypeptides, other than the nucleotide sequences of said ORFs.

10. An isolated nucleic acid according to claim 2 comprising a nucleotide sequence which encodes a polypeptide required for the attachment of the

mannosyl residue of A40926 consisting of *dbv* ORF 20 (SEQ ID NO: 21), or nucleotide sequences encoding the same polypeptide, other than the nucleotide sequence of said ORF.

11. An isolated nucleic acid according to claim 2 comprising a nucleotide sequence which encodes a polypeptide required for the N-methylation of A40926 consisting of *dbv* ORF 27 (SEQ ID NO: 28), or nucleotide sequences encoding the same polypeptide, other than the nucleotide sequence of said ORF.

12. An isolated nucleic acid according to claim 2 comprising a combination of nucleotide sequences which encode polypeptides required for export of A40926 or some of its precursors outside of the cytoplasm and for conferring resistance to A40926 to the producing strain consisting of *dbv* ORFs 7, 18, 19, 24 and 35 (SEQ ID NOS: 8, 19 to 20, 25 and 36), or nucleotide sequences encoding the same polypeptides, other than the nucleotide sequences of said ORFs.

13. An isolated nucleic acid according to claim 2 comprising a combination of nucleotide sequences which encode polypeptides required for regulating the expression of one or more genes of the *dbv* gene cluster consisting of *dbv* ORFs 3, 4, 6 and 22 (SEQ ID NOS: 4, 5, 7 and 23), or nucleotide sequences encoding the same polypeptides, other than the nucleotide sequences of said ORFs.

14. An isolated nucleic acid according to claim 1 comprising a nucleotide sequence consisting of the *dbv* gene cluster encoding the polypeptide required for the synthesis of a A40926 wherein an in frame deletion has been introduced in the nucleotide sequence encoding the polypeptides required for the attachment of the mannosyl residue.

15. An isolated nucleic acid according to claim 1 comprising a nucleotide sequence carrying at least one extra-copy of at least one of the *dbv* ORFs 1 to 37 (SEQ ID NOS: 2 to 38) or of a nucleotide sequence encoding the same polypeptides encoded by said *dbv* ORF, other than the nucleotide sequence of said *dbv* ORF.

16. An isolated nucleic acid of any of claims 1 to 15 wherein the nucleotide sequence is a DNA sequence.

17. A recombinant DNA vector which comprises a DNA sequence as defined in any of claims 1 to 15.

18. A recombinant vector according to claim 17 which is an ESAC vector.

19. A host cell transformed with a vector of any of claims 17 or 18.

20. A transformed host cell according to claim 19 which belongs to the order *Actinomycetales*, preferably to the family *Streptosporangiaceae*, *Micromonosporaceae*, *Pseudonocardiaceae* or *Streptomycetaceae*, more preferably to the genera *Nonomureae*, *Actinoplanes*, *Amycolatopsis*, *Streptomyces* or the like.

21. A method for increasing production of A40926 by a microorganism capable of producing A40926 or a precursor thereof by means of a biosynthetic pathway, said method comprising:

a) transforming with a recombinant DNA vector of claim 17 a microorganism that produces A40926 or a A40926 precursor by means of a biosynthetic pathway, wherein said DNA vector codes for the expression of an activity that is rate limiting in said pathway;

b) culturing said microorganism transformed with said vector under conditions suitable for cell growth, expression of said gene and production of said antibiotic or antibiotic precursor.

22. A transformed microorganism producing A40926 or a precursor or a derivative thereof, wherein the A40926 biosynthetic genes in its genome have been modified by insertion of a nucleotide sequence according to claim 15.

23. A process for producing A40926 or a precursor or a derivative thereof which comprises cultivating a transformed A40926-producing microorganism of claim 22.

24. A transformed A40926-producing microorganism having A40926 biosynthetic genes in its genome wherein at least one of the A40926 biosynthetic genes, selected from *dbv* ORFs 1 to 37 (SEQ ID NOS: 2 to 38), is disrupted.

25. A transformed microorganism according to claim 24, wherein the biosynthetic gene which is disrupted is the gene involved in the attachment of the mannosyl residue.

26. A process for producing a A40926 precursor or derivative which comprises a transformed A40926-producing microorganism of claim 24.

27. A method for producing a glycopeptide different from A40926 or a precursor thereof, which consists in:

a) (i) transforming with a recombinant DNA vector a microorganism that produces a glycopeptide or a glycopeptide precursor different from A40926 or a precursor thereof by means of a biosynthetic pathway, said vector or portion thereof

comprising one or more nucleotide sequence(s) of any of claim 1 to 13, coding for the expression of one or more polypeptide(s) that modifies(y) said glycopeptide or glycopeptide precursor; and

(ii)culturing said microorganism transformed with said vector under conditions suitable for cell growth, expression of said gene and production of said antibiotic or antibiotic precursor;

or

b) (i) transforming with a recombinant DNA vector a microorganism, said vector comprising one or more nucleotide sequence(s) of any of claims 1 to 13, coding for one or more polypeptide(s) that modifies(y) a glycopeptide or glycopeptide precursor (active polypeptide(s)), and said microorganism being selected among those that do not produce glycopeptides or glycopeptide precursors and that can efficiently express the introduced nucleotide sequence(s);

(ii) preparing a cell extract or cell fraction of said microorganism under conditions suitable for the presence of the active polypeptide(s), said cell extract or cell fraction containing at least said active polypeptide(s); and

(iii) adding a glycopeptide or glycopeptide precursor to said cell extract or cell fraction, and incubating said mixture under conditions where said active polypeptide(s) can modify said glycopeptide or glycopeptide precursor.

28. An isolated polypeptide comprising a polypeptide sequence involved in the biosynthetic pathway of A40926 selected from

a) an ORF polypeptide encoded by any of *dbv* ORFs 1 to 37 (SEQ ID NOS: 2 through 38) or a polypeptide which is, identical in amino acid sequence to an ORF polypeptide encoded by any of *dbv* ORFs 1 to 37 (SEQ ID NOS: 2 through 38), preferably by any one of the *dbv* ORFs 3 to 4, 6 to 10, 18 to 20, 22 to 23, 29 to 30 (SEQ ID NOS: 4 to 5, 7 to 11, 19 to 21, 23 to 24, 30 to 31 and 37);

b) a polypeptide which is at least 80%, preferably 86%, more preferably 90%, most preferably 95% or more, identical in amino acid sequence to a polypeptide encoded by any of *dbv* ORFs 3, 6 to 9, 18 to 20, 22 to 23 , 29 to 30 and 36 (SEQ ID NOS.: 4, 7 to 10, 19 to 21, 23 to 24, 30 to 31 and 37); and

c) a polypeptide which is at least 87%, preferably 90%, more preferably 95% or more, identical in amino acid sequence to a polypeptide encoded by any of *dbv* ORFs 4 and 10 (SEQ ID NOS: 5 and 11).

29. An isolated polypeptide comprising a polypeptide involved in the biosynthetic pathway of A40926 selected from the polypeptides encoded by any

of the nucleic acids of any of claims 3 to 16.